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EXAMINER

CHANG, JOSEPH

ART UNIT PAPER NUMBER

2817

DATE MAILED: 09/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/751,104

Applicant(s)

JACOBSSON ET AL.

Examiner

Joseph Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 05 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 19-26 is/are rejected.
- 7) ☒ Claim(s) 7-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/5/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The abstract of the disclosure is objected to because of misspelled "therefore" in line 2. Correction is required. See MPEP § 608.01(b).

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: AN OSCILLATOR HAVING AN AC-COUPLING BETWEEN FUNDAMENTAL FREQUENCY GROUND POINTS

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 19, 22-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Gharpurey US 6462626.

Regarding Claims 1 and 24, Gharpurey discloses in Figure 3 an oscillator circuit (22, quadrature oscillator) comprising a first differential oscillator (40, 42) and a second differential oscillator (44, 46), the first differential oscillator (40, 42) comprising at least one fundamental frequency AC-ground point (x, a fundamental frequency symmetrical point), the second differential oscillator (44, 46) comprising at least one fundamental frequency AC-ground (Y), the first differential oscillator (40, 42) and the second differential oscillator (44, 46) having substantially the same fundamental frequencies

(intrinsic characteristic of quadrature oscillator) characterized in that the oscillator circuit (22) comprises a first AC coupling (48) between one (X) of the at least one fundamental frequency AC-ground points (X, node between D1 and D2, node between L1 and L2, node between MA,MB,MBIAS1) of the first differential oscillator (40, 42) and one (Y) of the at least one fundamental frequency AC-ground points (Y, node between D3 and D4, node between L3 and L4, node between Mc,Md,MBIAS2) of the second differential oscillator (44, 46), thus locking the first differential oscillator to the second differential oscillator (Col. 3, lines 63-65).

Regarding Claim 2, Figure 3 shows the oscillator circuit (22) comprises a first quadruple frequency output (A, B, C, D), the first quadruple frequency output being coupled to the first AC coupling (48, through M1, M2 and M3, M4).

Regarding Claim 3, Figure 3 shows that the first differential oscillator (40, 42) and the second differential oscillator (44, 46) are substantially identical (intrinsic characteristic of quadrature oscillator).

Regarding Claim 4, Figure 3 shows that the first AC coupling (48) is between a first fundamental frequency AC-ground point (X) of the first differential oscillator (40, 42) and a first fundamental frequency AC-ground point (Y) of the second differential oscillator (44, 46), the first fundamental frequency AC-ground points (X) being identical fundamental frequency AC-ground points (fundamental frequency symmetrical points which are ac-ground points are identical because the structure is the same manner as disclosed in the specification).

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Regarding Claim 5, Figure 3 shows the oscillator circuit (22) comprises four fundamental frequency outputs (A, B, C, D), the four outputs being in quadrature (90 degree apart, B:0 (I), D:90 (Q), A:180 (-I), C:270 (-Q)).

Regarding Claim 6, Figure 3 shows a second AC coupling (VDD supply line) between a second fundamental frequency AC-ground point (VDD line between L1 and L2 of 40) of the first differential oscillator (40, 42) and a second fundamental frequency AC-ground point (VDD line between L3 and L4 of 44) of the second differential oscillator (44, 46), the second fundamental frequency AC-ground points (VDD line between L1 and L2 of 40) being identical fundamental frequency AC-ground points (fundamental frequency symmetrical points which are ac-ground points are identical because the structure is the same manner as disclosed in the specification).

Regarding Claim 19, Figure 3 shows that one AC coupling (48, two PMOS transistors are coupled) between two fundamental frequency AC-ground points (X and Y), is further coupled to a voltage source (VDD) via an AC-impedance element (PMOS).

Regarding Claim 22, the two PMOS transistor coupled to X and Y are considered a resistive coupling because PMOS is intrinsically resistive between source and drain terminals.

Regarding Claim 23, the two PMOS transistor coupled to X and Y are considered a capacitive coupling because intrinsically PMOS has a parasitic capacitance between source and drain terminals.

Regarding Claim 25, the recitation "a communication unit" has not been given patentable weight because the recitation occurs in the preamble. A preamble is

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generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Regarding Claim 26, Col.3, line 63-65 and Figure 3 discloses a method of frequency locking a first differential oscillator (40, 42) to a second differential oscillator (44, 46), characterized in that the method comprises AC coupling (48) a fundamental frequency AC-ground (X) of the first differential oscillator (40, 42) with a fundamental frequency AC-ground (Y) of the second differential oscillator (44, 46).

Claims 1-5, 19-21, 24-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Huang US 6456167.

Regarding Claims 1 and 24, Huang discloses in Figures 7 an oscillator circuit (quadrature oscillator) comprising a first differential oscillator (left side) and a second differential oscillator (right side), the first differential oscillator (left side) comprising at least one fundamental frequency AC-ground point (node between 704 and 703), a fundamental frequency symmetrical point), the second differential oscillator (right side) comprising at least one fundamental frequency AC-ground (node between 714 and 713), the first differential oscillator (left side) and the second differential oscillator (right side) having substantially the same fundamental frequencies (intrinsic characteristic of quadrature oscillator) characterized in that the oscillator circuit (quadrature oscillator)

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comprises a first AC coupling (direct line) between one (node between 704 and 703) of the at least one fundamental frequency AC-ground points (node between 704 and 703; node between 702 and 701) of the first differential oscillator (left side) and one (node between 714 and 713) of the at least one fundamental frequency AC-ground points (node between 714 and 713, node between 711 and 712) of the second differential oscillator (right side), thus locking the first differential oscillator to the second differential oscillator (the coupling by direct connection between two equilibrium points locks the first and second oscillator because the structure is the same manner as disclosed in the specification).

Regarding Claim 2, Figure 3 shows the oscillator circuit (quadrature oscillator) comprises a first quadruple frequency output (I+, I-, Q+, Q-), the first quadruple frequency output being coupled to the first AC coupling (direct line, through 704 and 714).

Regarding Claim 3, Figure 3 shows that the first differential oscillator (left side) and the second differential oscillator (right side) are substantially identical (intrinsic characteristic of quadrature oscillator).

Regarding Claim 4, Figure 3 shows that the first AC coupling (direct line) is between a first fundamental frequency AC-ground point (node between 704 and 703) of the first differential oscillator (left side) and a first fundamental frequency AC-ground point (node between 714 and 713) of the second differential oscillator (right side), the first fundamental frequency AC-ground points (node between 704 and 703) being identical fundamental frequency AC-ground points (Col. 4, lines 13-17).

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Regarding Claim 5, Figure 3 shows the oscillator circuit (quadrature oscillator) comprises four fundamental frequency outputs (I+, I-, Q+, Q-), the four outputs being in quadrature (90 degree apart).

Regarding Claims 19, 20, 21, Figure 3 shows that one AC coupling (direct line) between two fundamental frequency AC-ground points (node between 704 and 703 and node between 714 and 713), is further coupled to a voltage source (ground, where the negative side of a voltage source VDD is applied) via an AC-impedance element (NMOS 703).

Regarding Claim 25, the recitation "a communication unit" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Regarding Claim 26, this method claim is the same in scope as apparatus claim 1, which would necessarily perform the method claimed and therefore, the claim is rejected.

Allowable Subject Matter

Claims 7-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the best prior art of record, Gharpurey, taken alone or in combination of other references, does not teach or fairly suggest a second quadruple frequency output (Claim 7) or a third differential oscillator (Claims 8-18).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ghoshal disclose an LC oscillator using an inductive feedback.

Mourant discloses an image reject mixer using a quadrature combining circuit.

Gilbert discloses a quadrature oscillator using pairs of positive and negative impedance cells and transconductance cells.

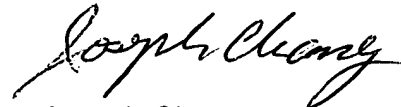
Gierkink et al. discloses a phase-error suppressor using a quadrature mixer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Chang whose telephone number is 571 272-1759. The examiner can normally be reached on Mon-Fri 0700-1730.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joseph Chang
Patent Examiner
Art Unit 2817